REMARKS

Restriction Requirement and Election

In a restriction requirement dated May 30, 2002, the Patent Office identified Claim 11 as generic to three separate and distinct species under 35 U.S.C. §121. In a response dated July 1, 2002, Applicants elected the species identified as Claims **1** (and claims 2, 6-7, and 12-16).

Pending claims

Claims 3-5, 8-11 and 17-31 remain pending but have been withdrawn from further consideration pursuant to 37 CFR 1.142(b). Claims 1, 2, 6, 7, and 11 have been amended. Claims 32-63 have been added. Claims 1-63 are pending in this application.

Claims readable upon elected species

Claim 46, added by this amendment, reads upon the elected species identified as Claims **1**.

Response to Rejection under 35 USC 102(e)

Claims 1-2, 6-7, and 12-16 stand rejected under 35 USC 102(e) as allegedly being anticipated by Yamazaki et al ('563). Applicants traverse this rejection.

The present application discloses a method of manufacturing a semiconductor device. The manufacturing method provides a way of controlling a threshold voltage of an insulated gate field effect transistor by doping an impurity into the channel region. As disclosed by the present application, to control the threshold voltage the concentration of the impurity must be accurately controlled. To achieve this control an impurity is first introduced into a semiconductor film and then a surface of the semiconductor film is oxidized to that the impurity diffuses from the semiconductor film into the thermal oxide film due to the high temperature during the thermal oxidation. As a result, the impurity concentration can be accurately controlled. As noted on page 13-14 of the present application, when the impurity is introduced by plasma doping without a mass separation it is difficult to obtain a uniform distribution, for example. Therefore, embodiments of the invention may be advantageously applied when the impurity is added by plasma doping without mass separation.

As presented, independent claim 1 is directed to a method of manufacturing a semiconductor device that includes "forming first and second semiconductor islands on an insulating surface..." and "introducing ions of a p-type impurity into at least a portion of only said first semiconductor island *without mass separation*".

Yamazaki teaches a method of introducing boron into a region for a PMOS device and then thermally oxidizing the surface of the semiconductor film. However, Yamazaki does not teach nor suggest that the impurity is introduced by plasma doping *without mass separation*, as recited by Applicants' claim 1.

Accordingly, for at least the reasons stated above, Applicants respectfully submit that the claims are allowable.

Applicants submit that all of the claims are now in condition for allowance, which action is requested.

Attached is a marked-up version of the changes being made by the current amendment.

Applicants asks that all claims be allowed. Enclosed is a $828 check for excess claim fees. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

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Version with markings to show changes made

In the claims:

Claim 3-5, 8-11 and 17-31 have been cancelled.

Claims 1, 2, 6, 7, and 11 have been amended as follows:

--1. (Amended) A method of manufacturing a semiconductor device, comprising the steps of:

forming first and second [active layers each formed of a crystalline semiconductor film] semiconductor islands on an insulating surface [of a substrate];

[making] introducing ions of a p-type impurity into at least a portion of only said first semiconductor island without mass separation wherein said portion is to become a channel region of a thin film transistor [active layer include an impurity element that impart p-type conduction]; and

subjecting said first and second [active layers] semiconductor islands to a thermal oxidization process to form a thermal oxide film on the first and second semiconductor islands [in order that] wherein said p-type impurity [element] is incorporated into [a] the thermal oxide film formed on said first semiconductor island [a surface of said first active layer];

[wherein the element depthwise is said first active layer active layer;]

[wherein said distribution of concentration of said impurity continuously reduced toward a main surface of in the vicinity of the main surface of said first impurity element remaining in the vicinity of the main surface of said first active layer is used to control a threshold voltage] wherein a concentration of said p-type impurity monotonically decreases from a first portion distant from an upper surface of the first semiconductor island to a second portion close to the upper surface in a depthwise direction of the first semiconductor island.

2. (Amended) A method of manufacturing a semiconductor device as claimed in claim 1,

wherein said first [active layer] semiconductor island constitutes a p-channel semiconductor device;

wherein said second [active layer] semiconductor island constitutes an n-channel semiconductor device; and

wherein said p-channel semiconductor device and said n-channel semiconductor device are complementarily combined with each other to form a CMOS structure.

6. (Amended) A method of manufacturing a semiconductor device as claimed in claim 1, wherein a thickness of said [active layer] first semiconductor island is 100 to 1000Å.

7. (Amended) A method of manufacturing a semiconductor device as claimed in claim 2, wherein a thickness of said [active layer] first semiconductor island is 100 to 1000Å.

11. (Amended) A method of manufacturing a semiconductor device comprising the steps of:

preparing a semiconductor island comprising crystalline silicon on an insulating surface;

introducing ions of an impurity comprising boron into at least a portion of said semiconductor island without mass separation, wherein said portion is to become a channel region of a thin film transistor; and then

oxidizing a surface of said semiconductor island to form an oxide film so that a part of boron introduced into said semiconductor island is incorporated into said oxide film.

Claims 32 - 63 have been added.